

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

ECOBEE, INC.,

Plaintiff,

v.

ECOFATOR, INC.,

Defendant.

C.A. No. 1:21-cv-00323-MN

**DEFENDANT ECOFACTOR'S RESPONSE TO CONCISE STATEMENT OF FACTS  
IN SUPPORT OF ECOBEE'S MOTION FOR SUMMARY THAT  
U.S. PATENT NO. 8,886,488 IS INVALID UNDER 35 U.S.C. § 112 (D.I. 151)**

Pursuant to the Court's Revised Scheduling Order (D.I. 29 ¶ 15(b)) and the amendments thereto (D.I. 107, 124), Defendant EcoFactor, Inc. ("EcoFactor") hereby responds to the Concise Statement of Facts submitted by Plaintiff ecobee Inc. ("ecobee") in support of its Motion for Summary Judgment that U.S. Patent No. 8,886,488 ("488 patent") Is Invalid Under 35 U.S.C. § 112 (D.I. 151).

**ecobee's Fact 1**

Claim 1 of the '488 patent requires, among other limitations, one or more processors configured to "calculate . . . one or more predicted rates of change in said inside temperature measurements" and "compare . . . at least one predicted temperature based on the one or more predicted rates of change, with an actual inside temperature measurement." Ex. B ['488 Patent] at Cl. 1.

**EcoFactor's Response to ecobee's Fact 1**

EcoFactor admits that this correctly quotes from the '488 patent.

**ecobee's Fact 2**

The Court has construed "compare" to mean "analyze/analyzing to determine one or more similarities or differences between." D.I. 112 at 1.

**EcoFactor's Response to ecobee's Fact 2**

EcoFactor admits that the Court construed “compare” as stated by ecobee.

### **ecobee’s Fact 3**

During prosecution of the ’488 patent, EcoFactor represented that “predicted rates” cannot mean a calculation “based on actual values that have been obtained currently, or in the past”:

#### **1) One Or More Predicted Rates Of Change In Inside Temperature**

Amended Claim 1 is directed to a system that calculates one or more predicted rates of change in the inside temperature measurements. This prediction is related to two factors: the status of the HVAC system, and the outside temperature measurements.

This concept is described, by way of example, in the Published Application at paragraph 0062.

Hildebrand, in contrast, does not describe the concept of calculating one or more predicted rates of change in inside temperatures measurements. Indeed, Hildebrand does not appear to predict any temperatures at all.

Still further, even if Hildebrand did calculate a predicted rate of change (which it does not), Hildebrand does not describe basing such a predicted rate of change on either the status of the HVAC system, or on outside temperature measurements.

Rather, Hildebrand compares existing measurements with previous measurements in order to determine system deterioration. While Hildebrand calculates a rate of change over time, this calculation is based on actual values that have been obtained currently, or in the past.

Because Hildebrand does not teach the concept of predicting inside temperature measurements, Applicant respectfully submits that amended Claim 1 is patentably distinct from Hildebrand.

Ex. D [11/27/13 Response to Non-Final Rejection] at 6; Ex. R [Auslander Report] at ¶ 252.

### **EcoFactor’s Response to ecobee’s Fact 3**

Denied. ecobee suggests there was a disclaimer of predicting the rate of change based on actual values obtained currently or in the past. *See* Mot. at 34; Mot. Ex. D at 6. But there was no disclaimer. Here, the Examiner asserted that prior art (Hildebrand) which taught only a historical

rate would anticipate a predicted rate. EcoFactor responded by explaining that “predicted rates” are not the same as “historical rates” that are based only on current or past values, which do not represent forecasts or predictions for a future time. Mot. Ex. D (arguing that Hildebrand calculates only a historical rate by “comparing existing measurements with previous measurements”). EcoFactor only distinguished what Hildebrand calculates (a historical rate) from the claimed invention (a predicted rate). EcoFactor made no disclaimer as to what the inputs to the calculation of the predicted rate could be. EcoFactor certainly did not disavow using historical or current data to generate the predicted rate of change, as is taught in the ’488 specification. *See* Mot. Ex. D at 6. Dr. Palmer agrees, and further explains that ecobee is mischaracterizing the prosecution history because ecobee has not addressed EcoFactor’s concurrent statement to the Examiner that the claimed feature for predicted rate of change is disclosed in the paragraph of the ’488 patent specification describing the use of historical data in database 300 to predict the rate of change. *See* Ex. 5<sup>1</sup> (Palmer Rpt.) ¶¶ 289-291. Given this record, there was no prosecution history disclaimer.

#### **ecobee’s Fact 4**

The ’488 specification refers to “calculat[ing] the expected thermostat temperature reading based upon the input data” and then “compar[ing] the predicted and actual values.” Ex. R [Auslander Report] at ¶ 265; Ex. B [’488 Patent] at 12:48-50. But there is no disclosure that predicting the expected thermostat temperature reading is “based on the one or more predicted rates of change.”

#### **EcoFactor’s Response to ecobee’s Fact 4**

EcoFactor admits that ecobee correctly cites to the ’488 specification for the quoted language at 12:48-50. EcoFactor denies the remainder of this “Fact” because there is a disclosure that predicting the expected thermostat temperature reading is “based on the one or more predicted

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<sup>1</sup> Numbered exhibits referenced herein refer to the exhibits submitted with EcoFactor’s concurrently filed Opposition to ecobee’s omnibus summary judgment brief.

rates of change.” For instance, the specification discloses predicting the rate of change in inside temperature, including predicting inside temperatures based on the predicted rate. *E.g.*, Mot. Ex. B ('488 patent) at 8:21-10:5. It also discloses comparing predicted temperatures to actual inside temperatures. *E.g.*, *id.* at 9:10-44, 10:57-12:55 (“In step 1306, the server retrieves data regarding current and recent temperature readings as recorded by the thermostat in home X...In step 1312, the server calculates the expected thermostat temperature reading based upon the input data. In step 1314, the server compares the predicted and actual values.”). EcoFactor’s rebuttal expert confirms these disclosures show possession of the claimed inventions. Ex. 5 (Palmer Rpt.) ¶¶ 301-308 (“[A] PHOSITA would readily understand the specification to show possession of this claimed feature.”).

Indeed, the specification explains how the system generates predictions based on historical data. Mot. Ex. B ('488 patent) at 8:21-9:9. Because the server logs historical data for the inside temperature and the timing and duration of air conditioning cycles, that historical data allows the system to predict the rate of change in inside temperatures:

Because server 106a logs the temperature readings from inside each house (whether once per minute or over some other interval), as well as the timing and duration of air conditioning cycles, database 300 will contain a history of the thermal performance of each house. That performance data will allow the server 106a to calculate an effective thermal mass for each such structure—that is, the *speed with the temperature inside a given building will change in response to changes in outside temperature* and differences between inside and outside temperatures. Because the server will also log these inputs against other inputs including time of day, humidity, etc. the server will be able to *predict, at any given time on any given day, the rate at which inside temperature should change for given inside and outside temperatures*.

*Id.* at 8:63-9:9; *see also id.* at 11:8-14 (“the server calculates ... the *likely rate of change* for internal temperature in home X from a starting point of 70 degrees ...”).

The specification also discloses several embodiments for comparing actual and predicted temperatures, including steps 1312 and 1314 in Figure 13 in which the “server compares the

predicted and actual values.” ecobee argues that these steps should be disregarded because the prediction is based on historical data and because steps 1312 and 1314 do not expressly say the words “predicted rate of change.” Both arguments fail. First, as shown above, predictions can be based on historical data and still show possession of the claimed invention, as there was no disclaimer of predicting from historical data. Second, a POSITA would understand that step 1312 calculates the predicted inside temperature based on the predicted rate of change, given the extensive teachings of how this is accomplished in Figures 6, 7, 8, 9, 11, 12 and the accompanying text. A POSITA would understand that the calculating of the expected temperature in Figure 13 is performed using the techniques disclosed for predicting the expected temperature in the text at col. 8:63-9:9 and 11:10-19. For example, in the text accompanying Figure 11, the specification explains how the server uses historical inputs such as indoor temperature (step 1110) and climate data (step 1102) to calculate the predicted rate of change and the predicted temperatures based on the predicted rate of change. *Id.* at 10:57-11:19. Then, in the text accompanying Figure 12, the specification explains how predicted temperatures are compared to current data to detect anomalies indicating a degradation in HVAC efficiency. *Id.* at 11:20-12:24. And in text accompanying Figure 13, the specification explains how predicted temperatures are compared to current data to detect anomalies due to improper thermostat location. *Id.* at 12:24-13:21. These disclosures are dispositive on the issue of written description. *See Ex. 5 (Palmer Rpt.) ¶ 271 (“[A] PHOSITA would readily understand the specification to show possession of this claimed feature.”).*

Even ecobee’s invalidity expert, Dr. Auslander acknowledged at deposition that the ’488 patent discloses “predictive models,” which Dr. Auslander acknowledged as “a model that, given the appropriate inputs, would be able to predict something for some point in the future.” Ex. 4 (Auslander Tr.) at 29:17-30:14; *see Mot. Ex. B* (’488 patent) at 9:34-42.

### **ecobee's Fact 5**

Mr. Hublou testified that “none of our patents actually disclosed any of our mathematics -- or the mathematics in order to be able to achieve this thing, to achieve the result.” Ex. N [8/10/21 Hublou Dep. Tr.] at 177:19-22. According to Mr. Hublou, EcoFactor’s patents do not “have any type of mathematical formula” to perform the claimed calculations, including calculating one or more predicted rates of change in said inside temperature measurements at said first location based on the status of the HVAC system. Id. at 180:20-25.

### **EcoFactor's Response to ecobee's Fact 5**

EcoFactor admits that ecobee correctly cites to the '488 specification for the quoted language at 12:48-50. EcoFactor denies the remainder of this “Fact.” The absence of a specific mathematical formula in the specification is not dispositive or even relevant to written description. As Dr. Palmer explains, the patent shows possession of the claimed invention to a POSITA through its prose and graphs. Ex. 5 (Palmer Rpt.) ¶¶ 272-274, 285, 307 (“The disclosure combined with the graphs in Figures 6, 7, and 8 describe the algorithm clearly to a POSITA.”). As inventor Mr. Hublou testified, the patent includes figures, flowcharts, and prose that describe EcoFactor’s patented inventions, which are not limited to a single mathematical formula. Ex. 16 (1258 Hublou Tr.) at 189:5-193:15, 171:1-172:21, 175:14-176:24, 178:21-183:15, 184:4-186:24; *see also* Mot. Ex. B ('488 patent) at 7:14-39, 4:38-5:23, 9:10-44, Figs. 2, 6a, 6b, 7a, 7b, 8a, 8b. ecobee quotes Mr. Hublou out of context, who merely explained that the patents do not disclose the exact mathematics that his later commercial product ultimately used, as his patents preceded the commercial deployments. But this does not change the fact that the patents show possession of the claimed inventions to a POSITA through their numerous graphs and flowcharts. Ex. 5 (Palmer Rpt.) ¶ 272, 285, 307.

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